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09/813,992	03/22/2001	Tomoki Hirota	Q63598	2670

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EXAMINER

WARREN, MATTHEW E

ART UNIT PAPER NUMBER

2815

DATE MAILED: 05/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/813,992

Applicant(s)

HIROTA, TOMOKI

Examiner

Matthew E. Warren

Art Unit

2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5,7 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5,7 and 11-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 11.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8,10. 6) ☐ Other:

DETAILED ACTION

This Office Action is in response to the Amendment filed on February 19, 2003.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 5 and 12-14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The added limitation of the fuse electrodes being "arrayed...with a pitch substantially equal to a spot diameter of a laser beam to be used for cutting" is not supported by the specification. The passages that describe the pitch of the fuse electrodes only show that spacing between the fuses is less than the spot diameter of the laser beam (for example see page 24, line 27-page 25, line 6). The drawings cannot be relied upon completely to disclose that limitation because there are no measurement markings illustrating the pitch of the fuses.

Claim 14 recites the limitation that "one successive fuse electrode...is disposed in a position in the insulating film that is the same as a position of a preceding fuse electrode of the plurality of fuse electrodes, in a direction of a thickness of the insulating film." The examiner interprets the limitation to mean that a second fuse is formed above

Art Unit: 2815

and aligned with a lower first fuse in the insulating layer. The specification does not support that limitation.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 5 and 11, as far as understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Korean Patent 1999-0085774.

Korean Patent 1999-0085774 shows (figs. 2, 5, and 6) an integrated circuit comprising a plurality of fuse electrodes (32) arrayed parallel to each other with a pitch less than a spot diameter (c in fig. 2) of a laser beam to be used for cutting the fuse electrodes. An insulating film (40 and 34) covering the fuse electrodes has a thickness, which prevents the laser from damaging the fuse electrodes, except for a plurality of cutting positions (50) formed over the electrodes. The insulating film at those cutting positions has a thickness, which allows the laser beam to pass through the insulating film and cut the fuses. The plurality of cutting positions are disposed in respective positions, which are different from each other in a direction in which the fuse electrodes extend.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5 and 11, as far as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over the Lee et al. (US 5,872,390) in view of Abe (JP-07-273200 A).

Lee et al. shows (figs. 1b and 1c) an integrated circuit device comprising a plurality of fuse electrodes (102) extending parallel to each other. An insulating film (120) covers the fuse electrodes and has a thickness (portion 118), which prevents a laser beam from damaging the fuse electrodes except for a plurality of cutting positions (regions 114 in 1b) formed over the fuse electrodes. The insulating film has thickness (portion 116) in plurality of cutting positions, which allows a laser beam to pass through to cut off the fuse (col. 3, lines 34-65). Lee et al. shows all of the elements of the claims except the plurality of cutting positions disposed in respective positions, which are different from each other in a direction in which the fuse electrodes extend. Abe discloses (abstract and translated sections) an integrated circuit having fuses (1, 2, 3) covered by a plate (4) that has windows (12, 22, 32) associated with each individual fuse. The windows are disposed in respective positions, which are different from each other in a direction in which the fuse electrodes extend and allow a specific fuse to be cut without damaging an adjacent fuse. The space between fuses is 4 m and the spot diameter of the beam is 10 m (pg. 2, [0017]). Therefore, the pitch of the electrodes is

Art Unit: 2815

less than the spot diameter of the beam. With this configuration, the damage to the other fuses is minimized and the spaces between the fuses can be minimized, thereby reducing the size of the fuse body. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the plurality of aligned cutting positions in the insulating layer of Lee by forming a plurality of windows having different or staggered positions over each individual fuse as taught by Abe to prevent damage to an adjacent fuse during the laser cut process, to minimize space between the adjacent fuses, and to ultimately reduce the size of the fuse body.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. (US 5,872,390) in view of Carson et al. (US 6,172,929 B1).

Lee et al. shows (figs. 1b and 1c) an integrated circuit device comprising a plurality of fuse electrodes (102) extending parallel to each other. An insulating film (120) covers the fuse electrodes and has a thickness (portion 118), which prevents a laser beam from damaging the fuse electrodes except for a plurality of cutting positions (regions 114 in 1b) formed over the fuse electrodes. The insulating film has thickness (portion 116) in plurality of cutting positions, which allows a laser beam to pass through to cut off the fuse (col. 3, lines 34-65). Lee et al. shows all of the elements of the claim except the adjacent fuse electrodes disposed in respective layers that are different from each other. Carson et al. shows (fig. 4a and 4b) an integrated circuit device comprising a plurality fuse electrodes (68o-68y or 64o-64y) extending parallel to each other and including adjacent fuse electrodes disposed in respective layers (see 68o and 64o in fig.

Art Unit: 2815

4b) which are different from each other. With this configuration, the fuse portion of the device will occupy a smaller area, thus reducing the size of the devices (col. 3, lines 46-54). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the plurality of fuses of Lee by stacking adjacent fuses in a different layer as taught by Carson to form more fuses while reducing the size of the fuse area.

Claim 12, as far as understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over the Lee et al. (US 5,872,390) in view of Abe (JP-07-273200 A) and Carson et al. (US,6172,929 B1).

Lee et al. shows (figs. 1b and 1c) an integrated circuit device comprising a plurality of fuse electrodes (102) extending parallel to each other. An insulating film (120) covers the fuse electrodes and has a thickness (portion 118), which prevents a laser beam from damaging the fuse electrodes except for a plurality of cutting positions (regions 114 in 1b) formed over the fuse electrodes. The insulating film has thickness (portion 116) in plurality of cutting positions, which allows a laser beam to pass through to cut off the fuse (col. 3, lines 34-65). Lee et al. shows all of the elements of the claims except the plurality of cutting positions disposed in respective positions, which are different from each other in a direction in which the fuse electrodes extend. Abe discloses (abstract and translated sections) an integrated circuit having fuses (1, 2, 3) covered by a plate (4) that has windows (12, 22, 32) associated with each individual fuse. The windows are disposed in respective positions, which are different from each

Art Unit: 2815

other in a direction in which the fuse electrodes extend and allow a specific fuse to be cut without damaging an adjacent fuse. The space between fuses is 4 m and the spot diameter of the beam is 10 m (pg. 2, [0017]). Therefore, the pitch of the electrodes is less than the spot diameter of the beam. With this configuration, the damage to the other fuses is minimized and the spaces between the fuses can be minimized, thereby reducing the size of the fuse body. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the plurality of aligned cutting positions in the insulating layer of Lee by forming a plurality of windows having different or staggered positions over each individual fuse as taught by Abe to prevent damage to an adjacent fuse during the laser cut process, to minimize space between the adjacent fuses, and to ultimately reduce the size of the fuse body.

Lee and Abe show all of the elements of the claim except the plurality of fuse electrodes disposed in a position in the insulating film that is different from a position of another fuse in a direction of the thickness of the insulating film. Carson et al. shows (fig. 4a and 4b) an integrated circuit device comprising a plurality fuse electrodes (68o-68y or 64o-64y) extending parallel to each other and including adjacent fuse electrodes disposed in respective layers (see 68o and 64o in fig. 4b) which are different from each other. With this configuration, the fuse portion of the device will occupy a smaller area, thus reducing the size of the devices (col. 3, lines 46-54). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the plurality of fuses of Lee and Abe by stacking adjacent fuses in a different layer as taught by Carson to form more fuses while reducing the size of the fuse area.

R sponse to Arguments

Applicant's arguments, see pages 7-10 of the response, filed February 19, 2003, with respect to the rejection(s) of claim(s) 7 under 35 USC 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Carson et al. (US 6,172,929).

Applicant's arguments filed with respect to claim 5 have been fully considered but they are not persuasive. The applicant primarily asserts that the 112 first paragraph rejection of claim is improper and that Abe cannot be combined with Lee. The examiner believes that the rejections are proper and that the applicant's invention is not patentable over the cited art. As stated above in the 112 Rejection, the specification does not clearly state that the pitch of the fuses is "equal to" the spot diameter of the laser beam. One skilled in the art would not be able to determine from the drawings that the pitch of the fuses is equal to the spot diameter of the beam because the drawings don't show any relationship between the beam diameter and the pitch. The drawings only show the fuses and the beam in its intended cutting positions.

The applicant also argues that Abe cannot be combined with Lee because Abe teaches a metal reflecting plate instead of controlling the insulating layer thickness. The examiner believes that Abe can be used in combination with Lee because Abe solves the same problem as the claimed invention. The invention of Abe also prevents adjacent fuses from being blown out while at the same time reducing the space between the fuses [0007]. Abe is only relied upon to teach the staggered cutting

Art Unit: 2815

positions. Although the cutting positions are formed in a metal plate instead of an insulating layer, the principle can be applied to Lee, which already discloses controlling the thickness of the insulation layer to allow cutting of the fuses by the beam. In essence, the staggering of the cutting positions (or beam port 12, 22, 32) allows the adjacent fuses to be protected during the cutting process and also reduces the space between fuses. Therefore, the cited references show all of the elements of the claims and this action is made final.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Art Unit: 2815

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Warren whose telephone number is (703) 305-0760. The examiner can normally be reached on Mon-Thurs, and alternating Fri, 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

MEW
MEW
May 1, 2003


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